



MS APPEAL BRIEF - PATENTS  
PATENT  
2964-0102P

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of	Before the Board of Appeals
Rolf SKOLD	Appeal No.:
Appl. No.: 09/381,828	Group: 1743
Filed: November 24, 1999	Examiner: A. SODERQUIST
Conf.: 4478	
For:	THE CHARACTERISATION OF PHYSICAL AND CHEMICAL PROPERTIES OF A LIQUID AND A DEVICE THEREFOR

## APPEAL BRIEF TRANSMITTAL FORM

## MS APPEAL BRIEF - PATENTS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

March 3, 2005

Sir:

Transmitted herewith is a Supplemental Appeal Brief on behalf of the Appellants in connection with the above-identified application.

☐ The enclosed document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

A Notice of Appeal was filed on March 3, 2005 to request reinstatement of the Appeal.

☒ Applicant claims small entity status in accordance with 37 C.F.R. § 1.27

The fee has been calculated as shown below:


Pursuant to 37 C.F.R. § 1.93(b)(2), Appellants submit that an Appeal Brief was previously filed on July 6, 2004, and the fee of \$165.00 was paid. Accordingly, the fee of \$85.00 to cover the increase in Appeal Brief fees is enclosed (\$250.00-\$165.00=\$85.00).

- ☐ Extension of time fee pursuant to 37 C.F.R. §§ 1.17 and 1.136(a) - \$0.00.
- ☐ Fee for filing an Appeal Brief - \$250.00 (small entity).
- ☒ A check in the amount of \$85.00 is attached.
- ☐ Please charge Deposit Account No. 02-2448 in the amount of \$0.00. A triplicate copy of this sheet is attached.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment(s)



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In re application of

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For: THE CHARACTERISATION OF PHYSICAL AND  
CHEMICAL PROPERTIES OF A LIQUID AND A DEVICE  
THEREFOR

SUPPLEMENTAL APPEAL BRIEF (REINSTATEMENT OF APPEAL)  
(in compliance with 37 C.F.R. § 41.37)



MS APPEAL BRIEF - PATENTS  
PATENT  
2964-0102P

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Before the Board of Appeals

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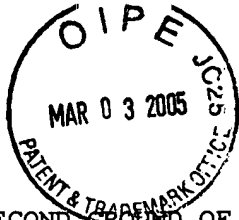
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For: THE CHARACTERISATION OF PHYSICAL AND  
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THEREFOR

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## MS APPEAL BRIEF - PATENTS

PATENT

0033-0693P

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Before the Board of Appeals

Rolf SKOLD

Appeal No.:

Appl. No.: 09/381,828

Group: 1743

Filed: November 24, 1999

Examiner: A. SODERQUIST

Conf.: 4478

For: THE CHARACTERISATION OF PHYSICAL AND  
CHEMICAL PROPERTIES OF A LIQUID AND A DEVICE  
THEREFOR

SUPPLEMENTAL APPEAL BRIEF (REINSTATEMENT OF APPEAL)  
(in compliance with 37 C.F.R. § 41.37)

## MS APPEAL BRIEF - PATENTS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

March 3, 2005

Sir:

Pursuant to the Notice of Reinstatement of Appeal filed on May 3, 2004, and in response to the Office Action of November 4, 2004 that reopened prosecution, the period for reply being extended one (1) month to March 4, 2005, Applicant (hereinafter "Appellant") requests reinstate of the Appeal in connection with the above-identified application. Further, this Supplemental Appeal Brief is respectfully submitted.

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**Reinstatement of Appeal: Supplemental Appeal Brief**

**(I) Real Party in Interest**

The real party in interest is Rolf Skold, the sole inventor and owner of all right and title in the claimed invention. No assignment of the claimed invention has been executed nor is of record.

**(II) Related Appeals and Interferences**

There are no related prior or pending appeals, interferences or judicial proceedings, which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal, known to Appellant or Appellant's legal representative that are pending for the present application.

**(III) Status of Claims**

Claims 1-10 remain pending in the present application. No claims have been previously canceled. Claims 3 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if properly rewritten into independent form, and are not at issue in the present appeal. The rejection of claims 1, 2, 4-8 and 10 are being appealed herein.

**(IV) Status of Amendments**

All replies filed before the Office Action of November 4, 2004 have been entered, except for one reply. A more detailed list of the

previous amendments and replies by Appellant are provided in the Appeal Brief of July 6, 2004, (see section titled "IV. Status of Amendments" at pages 3-5), which is hereby incorporated by reference. See M.P.E.P. § 1208.02 (allowing incorporation by reference).

**(V) Summary of Claimed Subject Matter**

Generally, the present invention provides an automated method for the collection of data in electronic form for a three-dimensional diagram (i.e., phase diagrams) containing a dependent physical and/or chemical property of a liquid as a function of temperature and a component concentration as independent variables (see the present specification at page 1, lines 4-8; see also page 3, lines 1-32 and Figure 2 showing the three-dimensional diagram). The present invention enables the access of a large number of measuring points of physical or chemical properties of a liquid as a function of temperature and concentration of a component (see the specification at page 3, lines 10-27, and the paragraph bridging pages 5-6).

Specifically, the present invention as recited in claim 1 is directed to a method for the characterisation of physical and/or chemical properties of a liquid (see the features of pending claim 1 and page 2, lines 6-25 of the specification), comprising the following steps:



1) at least one dependent physical and/or chemical property of a liquid is measured in a measuring cell as a function of temperature and a component concentration as independent variables,

2) the values for the component concentration in the measuring cell are determined by calculation, based on data from a control program for the change of component concentration in a computer and the temperatures are determined by calculation from a temperature control program or by measurements;

3) the value of the component concentration in the measuring cell is changed by adding in one step or gradually a predetermined amount of another liquid containing a different component concentration into the measuring cell according to the control program for the change of the component concentration, and a representative number of measurements of the dependent physical or chemical property are performed in the measuring cell within the whole selected temperature range within the predetermined change of the component concentration,

4) the procedures above are repeated at desired component concentrations and temperatures in order to obtain a wanted number of values;

5) the values obtained for the dependent properties are combined with the values for the independent properties to measuring points; and

6) the measuring points electronically stored in the computer are co-ordinated and visualised in a three-dimensional diagram.

Also, the present invention as recited in independent claim 7 (see also the specification at page 4, lines 1-20 and Figure 1 displaying a schematic for the device) is directed to a device embodiment for the characterisation of the physical and/or chemical properties of a liquid, which comprises components (a)-(c):

- a) a measuring cell (1) provided with
  - i) an equipment (2) for the homogenisation of a liquid,
  - ii) at least two control equipment (3, 17), which comprise or are attached to control programs for changing of the two independent variables, component concentration and temperature, in a predetermined manner, the control equipment (3) of the component concentration comprising a dosage organ for the addition of another liquid containing a different component concentration to the measuring cell,
  - iii) at least one measuring organ (9, 13, 14) for the determination of at least one dependent physical and/or chemical property of the liquid, and
  - iv) optionally a measuring organ (15) for the determination of the temperature,
- b) at least one computer (5) for
  - i) the reception and storage of data relating to the dependent and independent variables via at least one electronic circuit (11', 12', 13', 14', 15') and the calculation of at least the component concentration from data obtained from the control program and

- ii) compilation of the received and calculated values into three-dimensional measuring points and
- c) equipment (16) for visualisation of the measuring points stored in the computer in a three-dimensional diagram.

Thus, as claimed, measurements are performed in one measuring cell (1) which is combined with two sets of control equipment (3, 17), which comprise or attach to the control programs for the change of temperature and component concentration (see the specification at page 2, lines 26-31; also Figure 1 and page 5, lines 3-18). Measuring organs (9, 13, 14, and optionally 15) for the determination of at least one physical and/or chemical property is also included within the device of claim 7, and the data is routed and visualized via the computer (5) and equipment (16) (see the specification at page 2, lines 26-31; see also Figure 1).

Other embodiments of the present invention include variations of device claim 7 (see pending claims 8 and 10 and the specification at page 4, lines 21-29), a program in the computer controlling the changes in concentration and/or temperature for method claim 1 (see pending claim 4), measurements conducted in view of the temperature parameter for method claim 1 (see pending claims 2 and 5), and measurements conducted in view of the concentration component parameter for method claim 1 (see pending claim 6).

**(VI) Grounds of Rejections to be Reviewed on Appeal**

The most current Office Action of November 4, 2004 contains entirely new prior art rejections.

As stated in the current Office Action of November 4, 2004 in paragraph 4 (spanning pages 2-8 of the Office Action), claims 1, 2, 4, 5, 6, 7, 8 and 10 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over "**Franchini**" (G. Franchini et al., *J. Chem. Soc., Faraday Trans. 1*, Vol. 85(7), 1697-1707 (1989)) in view of "**Rouse**" (newly cited and applied in the November 4<sup>th</sup> Office Action; *JAACS*, Vol. 71, No. 1, pp. 37-42 (1995)), "**Baxter**" (D.C. Baxter et al., *Chem. Abstr.*, Vol. 112, 209884s) and "**Cunha**" (I.B.S. Cunha, *Analyst*, Vol. 117, pp. 905-11 (1992)) or "**Renoe**" (B. W. Renoe et al. (*Analytical Chemistry*, Vol. 48, No. 4, pp. 661-66 (1976)) and "**Bader**" (M. Bader, *Journal of Chemical Education*, Vol. 57, No. 10, pp. 703-6 (1980)), "**Laughlin**" (R.G. Laughlin, *Journal of Colloid and Interface Science*, Vol. 55, pp. 239-241 (1976)), "**Li**" (H. Li, *Analyst*, Vol. 112, pp. 1607-9 (1987)), "**Rodriguez**" (L.C. Rodriguez et al., *Journal of AOAC International*, Vol. 78, No. 2 (1995)) or "**Saxberg**" (Bo. E.H. Saxberg et al., *Analytical Chemistry*, Vol. 51, No. 7, pp. 1031-38 (1979)). This is the first ground of rejection, wherein the rejection of claims 1, 2, 4-8 and 10 are appealed.

The second ground of rejection is stated in paragraph 5 (spanning pages 8-9) of the November 4, 2004 Office Action, wherein

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claims 1, 2, 4, 5, 6, 7, 8 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over **Rouse** (newly cited and applied) in view of "**Ajith**" (newly cited and applied; S. Ajith et al., "Effect of NaCl on a Nonionic Surfactant Microemulsion System," *Langmuir*, Vol. 11, pp. 1122-1126 (1995)) and "**Inoue**" (newly cited and applied; T. Inoue et al., "Aggregation Behavior of Hexaethylene Glycol Decyl Ether/ Dipalmitoylphosphatidylcholine Mixture in Aqueous Dispersion," *Journal of Colloid and Interface Science*, Vol. 156, pp. 311-318 (1993)). The rejection of claims 1, 2, 4-8 and 10 are appealed.

Further, as stated in paragraph 2 (page 2) of the November 4, 2004 Office Action, claim 5 stands objected to because "with" has been misspelled as "wit". This objection is not being appealed.

#### **(VII) Arguments**

Overall, Appellant contends that claims 1, 2, 4-8 and 10 are patentable under 35 U.S.C. § 103(a) over the Franchini, in view of Rouse, Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg. Further, Appellant contends that claims 1, 2, 4-8 and 10 are patentable under 35 U.S.C. § 103(a) over the combination of Rouse, Ajith and Inoue. Each ground of rejection is addressed below.

A. FIRST GROUND OF REJECTION: The combination of Franchini, Rouse, Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg

Claims 1 and 4 are appealed and argued separately from claims 2 and 5, claim 6, and claims 7, 8 and 10.

In summary, Appellant asserts that the instant rejection of claims 1-2, 4-8 and 10 should be reversed based on any one and all of the following:

- The cited combination of references fails to disclose all claimed features;
- One having ordinary skill in the art would not be motivated in combining the cited references in order to achieve the present invention;
- One having ordinary skill in the art would not be reasonably expect to be successful in combining the cited references in order to achieve the present invention; and
- Unexpected results exist for the present invention, whereby such unexpected results rebut any asserted *prima facie* case of obviousness.

More specifically, claims 1-2, 4-8 and 10 are patentable over the cited combination of Franchini, in view of Rouse, Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg because the cited

references, even when combined, fail to disclose all features as instantly claimed. Further, the cited references have been improperly combined since a person having ordinary skill in the art at the time of filing the present application, and upon reading the cited references, would not be motivated or reasonably expect to be successful in combining the cited references in order to achieve the present invention due to inconsistencies between the references. Further, the present invention has achieved unexpected results of a more efficient and improved method and device, which rebuts any asserted *prima facie* case of obviousness.

**1. Appealed claims 1 and 4**

With regard to appealed claim 1 and the dependent claim 4, the cited combinations of references fail to describe the present invention's features and advantages.

The present invention (as recited in claim 1) allows the determination of dependent physical and/or chemical properties simultaneously, wherein there is an access of a large number of measuring points of physical or chemical properties. Note that in, e.g., step 3) of appealed claim 1, the component concentration in the measuring cell is varied when adding a predetermined amount of another liquid into the measuring cell, wherein the other liquid contains a different component concentration. Thus, the component concentration,

as well as the temperature, are varied in a predetermined fashion. And as recited in step 5) of appealed claim 1, the values for the dependent properties are combined with the values of the independent properties and made into measuring points. After obtaining an adequate number of measuring points, the physical and/or chemical properties of a liquid or solution can be characterized, wherein such characterization is in essence, measuring points electronically taken, stored and coordinated, and then visualized via a computerized three-dimensional diagram (*i.e.*, a phase diagram of the liquid) (see Fig. 3 of Appellant's specification).

With regard to these features of the present invention, Appellant respectfully submits that none of the cited combinations of references describe the features of, or motivate or make one of ordinary skill in the art reasonably expect to be successful in achieving, the present invention of the characterization of physical and/or chemical properties of a liquid wherein one dependent physical and/or chemical property of a liquid is measured as a function of both temperature and component concentration, and are controlled within selected ranges in order to obtain a wanted number of values (as asserted by Appellant previously; see, *e.g.*, the reply filed March 3, 2004, starting at page 3, which includes a graph comparing the present invention with the cited references).



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U.S. case law squarely holds that a proper obviousness inquiry requires consideration of three factors: (1) the prior art reference (or references when combined) must teach or suggest all the claim limitations; (2) whether or not the prior art would have taught, motivated, or suggested to those of ordinary skill in the art that they should make the claimed invention (or practice the invention in case of a claimed method or process); and (3) whether the prior art establishes that in making the claimed invention (or practicing the invention in case of a claimed method or process), there would have been a reasonable expectation of success. See *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991); see also *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1599 (Fed. Cir. 1988). With regard to Appellant's position of patentability, Appellant respectfully submits that not all requirements for a *prima facie* case of obviousness have been satisfied based on the cited combinations of references, and thus the cited references have been improperly combined.

**a. A *prima facie* case of obviousness has not been established:**

**Summary of lack of disclosure of all claimed features**

Below is a chart summarizing how each and every one of the cited references, as well as the combination thereof, is deficient in disclosing all claimed features.

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Characteristics of the Invention As <u>CLAIMED</u>		COMPARATIVE CHART: Claim 1 of present invention v. Franchini, Rouse, etc.							
No.	Feature	Claim 1 of Appl. No. 09/381,828	Franchini	Rouse	Laughlin	Bader	Cunha	Baxter Rodriguez Li or Saxberg	Renoe
1	Automated	Yes	No	Yes	No	No	Yes	No	Yes
2	Numerical measurement of property as a function of concentration and temperature	Yes	Yes	No	No <sup>1</sup>	No	No	No	No
3	Concentration is changed according to computerized control program and	Yes	No	No <sup>4</sup>	No	No	No	No	Yes
4	calculated from the program by a computer	Yes	No	No <sup>4</sup>	No	No	No	No	Yes
5	Temperature is changed by a temperature control program and	Yes	No	No	No	No	No	No	No
6	temperature is calculated from the program or by measurements	Yes	No	No	No	No	No	No	No
7	Concentration is changed by addition directly into the measuring cell according to the control program for concentration	Yes	No	No <sup>4</sup>	No <sup>2</sup>	No <sup>2,3</sup>	No	No	No
8	Measurements of the dependent property within the temperature range for each concentration level	Yes	Yes	No	No	No	No	No	No
9	Values of the property are combined with the independent variables by the computer	Yes	No	No	No	No	No	No	No
10	and the measuring points in the computer are coordinated and visualized in a 3-dimensional diagram	Yes	No	Yes	No	No	No	No	No
11	Determination of concentration from the control program	Yes	No	Yes	No	No	No	No	Yes

1 no numerical measurements

2 no change by control program

3 only additions to the sample for each determination of concentration

4 samples were manually produced

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The chart as shown above was submitted with Appellant's responses of March 3 (at page 4) and March 30 (at page 3), 2004, and has been appropriately modified to correspond to the instant ground of rejections, which are new rejections in the Office Action of November 4, 2004 (Rouse is newly cited and applied). Appellant adds that a review of appealed claim 1 recites, at a minimum, all of the above features 1-11. Feature 1 in the graph regarding automation corresponds to all steps of claim 1; feature 2 of the graph corresponds to step 1 of claim 1; features 3 and 7 correspond to step 3 of claim 1; features 4-6 of the graph correspond to step 2 of claim 1; feature 8 of the graph corresponds to steps 1 and 4 of claim 1; features 9 and 11 correspond to step 5 of claim 1; and feature 10 corresponds to step 6 of claim 1. Thus, though there are six steps recited in appealed claim 1, there are 11 features in these steps.

As can be seen from the chart below, a *prima facie* case of obviousness has not been established since the asserted combination of references fails to suggest, teach or disclose all features as instantly claimed. *In re Vaeck*. For instance, Appellant respectfully refers the Board to the features labeled as No. 5, 6, 7 and 9 of the present invention in the chart, wherein the cited combination fails to disclose each of these numbered features of the invention.

- b. A Prima Facie Case of Obviousness Has Not Been Established:  
disclosure and teachings of references and reasons for no  
motivation and/or reasonable expectation of success

Appellant respectfully submits that each and every reference has been improperly combined with one another and all requirements for a *prima facie* case of obviousness have not been satisfied (*i.e.*, lack of disclosure of all claimed features, lack of requisite motivation and lack of requisite reasonable expectation of success). The requirements for a *prima facie* case of obviousness are addressed below.

(1) *All Features As Instantly Claimed*

As can be seen from the above chart, not even the cited combinations of references disclose all features as instantly claimed. For example, no cited reference (even when combined with other cited references) discloses the claim language labeled as No. 5 (temperature is changed by a temperature control program), 6, 7 or 9. Thus, not even the initial requirement for a *prima facie* case of obviousness has been met (*i.e.*, disclosure of all claimed features). See *In re Vaeck*. Appellant adds that accounting for such a lack of disclosure is not obvious to one of ordinary skill in the art (for the reasons stated below) since the Examiner has not provided sufficient evidence to prove otherwise that rebuts Appellant's presumption of patentability. Thus, reversal of this ground of rejections is

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respectfully requested for the reason that the cited combinations of references fails to satisfy the requirement of disclosure of all claimed features of the present invention for establishing a *prima facie* case of obviousness.

With regard to the Advisory Action of March 31, 2004, which was in response to Appellant's reply of March 3, 2004, Appellant respectfully disagrees with the Examiner's position regarding the above graph (see "Continuation of 5." on the Continuation Sheet) (this is Appellant's second opportunity to address Examiner's comments, wherein the first opportunity was in the filed Appeal Brief). Appellant agrees that the chart would be applicable against any rejection under a subsection of 35 U.S.C. § 102. However, Appellant respectfully requests the Board to consider the above graph with respect to the outstanding § 103(a) rejections to show that not only that each cited reference is greatly deficient in its disclosure of the present invention, but that the cited references cannot be properly combined due to the many inconsistent disclosures in the reference. Further, with regard to the same Advisory Action, though feature 5 is stated in the alternative as asserted by the Examiner, feature 4 or feature 5 is a required feature of the present invention. In either case, the cited combinations of references fail to render the present invention as obvious. In addition, feature 11 is not duplicative of any other feature as explained above.

With regard to the rest of the Examiner's comments in the March 31<sup>st</sup> Advisory Action (*i.e.*, the Examiner takes issue with Franchini in relation to features 5-6 and 9-10), Appellant respectfully submits that such points are addressed below.

(2) *Lack of the Requisite Motivation and Reasonable Expectation of Success*

Appellant herein discusses the actual disclosure of each of the cited references with regard to the present invention, including how each of the references solves its problems. Overall, based on such disclosure in the cited references, Appellant submits that the references have been improperly combined and that the requisite motivation and/or reasonable expectation of success are lacking and that a *prima facie* case of obviousness has not been established. Further, as can partially be seen from the above chart, Appellant submits that any cited combination of these references is improper.

(a) Franchini

Franchini is the primary reference in this ground of rejection. However, Franchini fails to disclose steps 2, 3, 4, 5 and 6 of instantly pending claims 1 and 4, and features labeled as numbers 1, 3-7 and 9-11 as seen in the graph above (on page 13 of this Brief). In this regard, an analysis under 35 U.S.C. § 103(a) requires a

determination of the scope and content of the prior art, *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). In determining the scope and content of the prior art as required by *Graham v. John Deere Co.*, an evaluation of the claimed subject matter as a whole in the light of the differences between appealed claim 1 of the present invention and the cited prior art of Franchini reveals that Franchini is significantly limited in scope of its disclosure of the present invention. Despite the Examiner only admitting "Franchini does not teach automated control of the dilutions in a single container" (see page 3, lines 11-12 of the November 4<sup>th</sup> Office Action), there is no disclosure or recognition of the features numbered as 1, 3-7 and 9-11 in the chart above in the primary reference of Franchini. In other words, the Examiner has not accounted for many of the claimed features of the claimed invention (whether Franchini is combined with other references or not). Thus, the instant rejection under 35 U.S.C. § 103(a) is improper, and Appellant respectfully requests the Board to consider such deficiencies. Overall, Franchini has a significantly deficient disclosure regarding the features of the claimed invention, and one of ordinary skill in the art would not combine this reference with any of the other cited references in order to establish a *prima facie* case of obviousness.

Further, in the most current Office Action of November 4, 2004, Franchini is the only reference that is concerned with measuring a physical or chemical property as a function of both temperature and concentration. Specifically, on page 1697, last paragraph (and as stated in the December 3<sup>rd</sup> Office Action at paragraph 2, page 2), Franchini et al. makes the following statement:

The large amount of experimental data obtained led us to make another attempt at an empirical approach to the problem of the dependence of the dissociation constant both on the temperature and on the composition of the binary solvent system.

From this statement, in contrast to the Examiner's comments in the November 4<sup>th</sup> Office Action in the paragraph bridging pages 7-8, it is evident that the cited Franchini reference fails to disclose or recognize any solution to the problem of handling the large amount of data in connection with the creation of a three-dimensional diagram (*i.e.*, as stated in Franchini, " ... led us to make another attempt at an empirical approach ... "). Instead, Franchini makes an empirical approach to clarify the dependence of the dissociation constant of weak electrolytes on the temperature and on binary ethane-1,2-diol and 2-methoxyethanol solvent systems. In the disclosure of this primary reference, conductance data from an earlier work were integrated by those obtained from three new mixtures. These new mixtures were prepared with purely manual methods (see p. 1698, 3<sup>rd</sup> paragraph). First, the solvents mixtures were prepared by weight. The solutions of



picric acid at different concentrations were obtained by successive dilution of stock solutions. Then, the concentrations in volume were calculated from the weight concentrations and the densities. The conductance readings were recorded when they became invariant with time, which took about 30 minutes. Thus, one of ordinary skill in this art can recognize that there are significant differences between the Franchini method and that of Appellant's claimed invention.

First, the process disclosed in the cited Franchini reference is completely by hand or manual. Applicants submit that the skilled artisan would not even initially refer to Franchini in order to achieve the present invention based on this distinguishing characteristic itself. Second, the steps 2, 3 (concentration is changed according to a computerized control program), 4, 5 and 6 of claim 1 of the present are not disclosed or recognized by the cited primary reference of Franchini. Thus, Franchini is far removed from the claimed invention, and the Examiner has not provided the sufficient reasons as to why one of ordinary skill in the art would refer to this reference in the first place given that this reference is so deficient in disclosing the present invention's features.

Appellant also submits that in the present invention the changes of the component concentrations are made by adding another liquid with a different concentration of the component **to the previous liquid or a part of the previous liquid in the measuring cell**. But in Franchini,

the different samples were individually prepared from stock solutions. This process is in contrast to the present invention when in the presently claimed process there is only one sample existing at each point of time, namely the sample in the measuring cell, and, after the measuring of the dependent variable or variables, the succeeding sample **is directly prepared in the measuring cell**. There is a fundamentally different approach in Franchini, and these are significant and great differences in principles and goals between Franchini and the present invention with regard to preparing samples.

Regarding such great differences, Appellant respectfully submits that any cited reference used for a rejection under 35 U.S.C. § 103(a) must be considered in its entirety, i.e., as a whole, including those portions that would lead away from a claimed invention. See *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). In other words, the cited Franchini reference must be read in its entirety, including any *fundamental* difference when it comes to the preparation of samples. As can be seen, the present invention is not only a simple "translation" of a manual method into an automatic process (see the paragraph bridging pages 7-8 of the November 4, 2004 Office Action for the Examiner's reasons for combining the cited references). One of ordinary skill in the art would recognize a multitude of factors for such a proposition. The outstanding Office Action has not accounted

for such problems and factors involved in automating such methods (i.e., the manual method and lack of disclosure of handling large amounts of data in Franchini). Instead, the conclusions in the Office Action are devoid of such considerations (i.e., how a succeeding sample is directly prepared in a measuring cell), and there is no clear and particular guidance in Franchini for the skilled artisan to make the claimed invention. Thus, Appellant respectfully submits that one of ordinary skill in the art would not even refer to the Franchini reference in the first place based on such fundamental and principle differences. Accordingly, Appellant requests reversal of all rejections based on the Franchini reference.

(b) Rouse (newly cited)

With regard to the newly cited and applied Rouse reference, Appellant respectfully submits that this reference comes no closer to the present invention than any of the other previously cited references, including Franchini. Further, Rouse cannot be properly combined with the other cited references, and such a combination (whether or not proper) still does not produce the present invention.

First, the cited secondary reference of Rouse fails to disclose features 2-9 (see the chart above on page 13 of this Brief), making this reference not accounting for the deficiencies of any of the other cited references. *In re Vaeck; Graham v. John Deere Co.* Second, one

of ordinary skill in this art would not refer to the Rouse reference in the first place, or even upon a reading of the cited primary reference (i.e., there is a lack of motivation; lack of reasonable expectation of success).

The cited secondary reference of Rouse relates to an automated titration system for generating data to construct phase diagrams related to microemulsions (see Abstract). In the Rouse procedure, a microemulsion (a clear liquid) is first titrated with an oil until the sample turns cloudy (see page 3, lines 13+ of the Office Action). The sample is then dosed with a cosurfactant in quantity that is **more than enough** to clear the sample. The sample is again titrated with oil and the procedure continues until the sample no longer clears up, when adding the cosurfactant. Thus, the additions of oil and cosurfactant are unpredictable, which is not the present invention. Appellant notes that the Examiner's comments at paragraph 7 of the November 4<sup>th</sup> Office Action amount to an over-simplification of the Rouse disclosure. Also, the values obtained in Rouse is based on the concentration of the surfactant in the original sample. In order to obtain new values, new samples with another concentration of the surfactant have to be prepared and the whole process for collecting data has to be repeated. Each sample is provided with an individual set up and operating instructions (which is also not the present invention). Furthermore, the different samples are handled by a sample change unit with up to

16 samples and a sample lift station (which is not the present invention).

Thus, one of ordinary skill in the art would recognize, upon understanding the present invention and upon reading the Rouse reference, that the aim, method and equipment of Rouse essentially differ from that of the present invention. The present invention (as recited in claim 1) relates to the creation of a three-dimensional diagram with temperature and concentration as independent variables and a physical or chemical property as the dependent variable. Despite the Examiner's assertion in paragraph 7 of the November 4<sup>th</sup> Office Action, the newly cited Rouse reference does not disclose or recognize any three-dimensional system of this kind. Further, according to the present invention, all preparation of samples are made directly in the measuring cell in a predetermined manner by a computerized control program for the concentration without the need of a sample change unit. However, a sample lift station and producing new starting samples are required in Rouse. Thus, the skilled artisan would recognize that the present invention is significantly different in aim, method and equipment used for the present invention versus that in Rouse. Accordingly, despite the assertions in paragraph 7 of the Office Action, Rouse is inconsistent with the present invention and with Franchini, and such inconsistencies have not been accounted for in the outstanding Office Action.

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In response to the new rejection (as stated in paragraph 4 of the November 4<sup>th</sup> Office Action), Appellant respectfully submits that there is no "clear and particular" guidance in Franchini for one of ordinary skill in the art to refer to Rouse and vice versa. The applicable case law here is *In re Dembiczak*, which holds that while a reference need not expressly teach that the disclosure contained therein should be combined with another, see *Motorola, Inc. v. Interdigital Tech. Corp.*, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997), the showing of combining references "must be clear and particular". 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Though the Office Action refers to how it would be obvious to one of ordinary skill in the art to automate the Franchini method because Rouse shows the ability to map out a property (see the November 4, 2004 Office Action at page 7, lines 19-23), and further states that "providing a mechanical or automatic means to replace manual activity which accomplishes the same result is within the skill of a routineer in the art" (last sentence of paragraph 4 of the Office Action), Appellant respectfully and heavily disagrees with these assertions. First, this is an over-simplification on the Examiner's part regarding the disclosure and teachings of the references, and such a conclusion does not take into account the inconsistencies between the cited references. For instance, the amounts of additions of oil and cosurfactant in Rouse were unpredicted and made in order to discover a phase border and to produce a

completely different type of diagram with no interest or relation to Franchini. Second, it is not even clear in the Office Action as to why one of ordinary skill in the art would refer to the Rouse reference, upon reading Franchini, when the Examiner states, for example, that Rouse has multiple samples performed, each having an individual setup and operating instructions (page 3, lines 22-23 of the Office Action). Though the Examiner states that Rouse "in particular is directed to an apparatus and method in which this occurs in a totally automated manner" (paragraph 7 of the Office Action), the Rouse disclosure does not even correspond to the claimed invention that uses all sample preparations which are directly made in the measuring cell in a predetermined manner by a computerized control program for the concentration (without the need of a sample change unit like Rouse). Further, since Rouse regularly produced new samples with different amounts of the surfactant in water and used a sampling device to place the sample in the measuring cell (wherein the Examiner's comments in paragraph 7 of the November 4<sup>th</sup> Office Action amount to an over-simplification of the Rouse disclosure), a combination of Rouse and Franchini would even not result in the instantly claimed process. Thus, even combining Franchini and Rouse with the other cited references would not produce the instant invention (explained in more detail below).

Accordingly, a consideration of such inconsistencies reveals that the requisite motivation and reasonable expectation of success are lacking here. Appellant respectfully submits, based on the disclosure of Rouse and Franchini, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in combining these references with any of the other cited references since both have features that are inconsistent with each other and the instantly claimed features. Some other method by combining these references would be generated with such a proposition, and there is no "clear and particular" guidance for one of ordinary skill in the art to even refer to Franchini and/or Rouse in order to achieve the present invention.

Rouse further fails to disclose many features of the present invention. Given the deficiencies of the Franchini reference already, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in combining Rouse and Franchini and/or with any of the other cited references since the present invention would still not be produced. There is no guidance in either reference to refer to one another.

Even assuming *arguendo* that it would be possible for a person skilled in the art to replace the manual handling of the samples of the Franchini reference with the automated system disclosed in Rouse, the present invention is not made when the Rouse reference does not



even account for the deficiencies of the other primary reference of Franchini or any other cited reference, wherein both of these references fail to disclose all features as instantly claimed (i.e., see steps 3) and 4) of instantly appealed claim 1). Neither Franchini nor Rouse discloses the other characteristic parts necessary in the automated method of claim 1 in the present invention. Thus, there is no motivation or reasonable expectation of success for the skilled artisan to combine these references, and Appellant submits that any rejection based on these references is improper.

Appellant also respectfully refers the Board to the comparative chart provided above (on page 13), wherein the Examiner has yet to produce a reference that shows automation of all instantly claimed features. Instead, the Examiner throughout the Office Action discusses the disclosure of individual references (over several pages) and concludes the cited references could be combined to achieve the claimed invention despite the different and/or contrary teachings of each reference. Appellant respectfully submits that one of ordinary skill in the art upon reading such teachings in the references, such as Franchini and Rouse, would still not produce the claimed invention since the references are technologically inconsistent with each other and do not disclose all instantly claimed features. For instance, the technological explanation above shows how one of ordinary skill in the

art would not combine the teachings of Franchini with that of Rouse in an attempt to achieve the present invention.

Appellant also objects to the reopening of prosecution after Appellant filed the Notice of Appeal with the proper Appeal Brief (filed July 6, 2004). This is because the newly cited references and combinations thereof come no closer to the present invention, and the cited references have still been improperly combined. Further, the newly cited references and formation of new rejections are not in response to Appellant adding or amending any of the pending claims. The scope of the pending claims has not changed since Appellant's Reply of October 3, 2002.

(c) Baxter

The cited Baxter reference fails to disclose each and every feature as instantly claimed (see the chart above on page 13). Thus, Appellant respectfully submits that this reference should not have been cited in the first place based on such a deficient disclosure.

Baxter is directed to a simplified generalized standard method for a direct analysis of solid samples by graphite furnace atomic spectrometric techniques. By varying both a **solid** sample mass and the amount of an analyte, the observed response may be described in a three-dimensional diagram as a function of the solid sample mass and of the analyte. With regard to this disclosure in Baxter, Appellant

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respectfully submits that one skilled in the art would not combine or even refer to this reference, upon a reading of Franchini or any of the other cited references, in order to achieve the present invention. Baxter does not even account for all of the deficiencies of any of the references, including Franchini and Rouse. Further, a combination of the primary reference of Franchini, Rouse, etc. with Baxter would result in a method and a device that is not instantly claimed (solid sample mass; manual method). Accordingly, reversal by the Board of any rejection based on Baxter is respectfully requested.

(d) Cunha

Cunha fails to disclose many features as instantly claimed (see the chart above on page 13 of this Brief).

The cited Cunha reference relates to gravimetric burettes and their supplies **with suitable solutions for titration**. In the burette, quantitative analyses of components are performed by titration. However, no titration or no other quantitative analysis is performed in the measuring cell in the present invention. Also in the present invention but unlike Cunha, the concentration of the component in the measuring cell as well as the temperature are amended in a predetermined way, while at least one dependent physical or chemical property is measured.

Thus, Appellant submits that Cunha does not disclose almost every feature of instantly pending claim 1 and claim 4. In fact, Cunha does not account for the deficiencies of any of the other cited references, including the primary reference of Franchini, which makes the instant rejections improper (no disclosure of all claimed features to establish a *prima facie* case of obviousness). Further, the cited Cunha reference does not disclose how to make a different solution with a known concentration and how to measure a dependent physical or chemical property as a function of concentration and temperature (see the chart on page 13 summarizing the features of instantly pending claim 1). Due to its titration in the measuring cell, it will also be necessary to completely change the fluid in the measuring cell between each titration. This is another fundamental difference between this reference and the present invention, and the requisite motivation is lacking. Thus, Appellant respectfully submits that the disclosure of Cunha does not, whether taken alone or in combination with Franchini or any other of the cited references (whether proper or not), pertain or disclose the features of the present invention (as defined in claim 1 or claim 4). Thus, reversal of the rejections is accordingly requested.

(e) Renoe

Renoe fails to disclose features 2, 5 (temperature is changed by a temperature control program), 6, 7, 8, 9 and 10 (see the chart above on page 13 of this Brief) and one of ordinary skill in the art would not refer to the Renoe reference in the first place or upon a reading of the cited primary reference of Franchini.

The cited secondary reference of Renoe relates to an automated system for preparing solutions. Specifically, Figure 1 on page 662 of Renoe shows a system that produces a large number of individual samples, which have to be handled later. This is contrast to the present invention that utilizes one sample, wherein new samples are directly produced in the measuring cell by the assistance of a control program for the change of concentration. Thus, the Renoe disclosure relates to a method for handling sampling that is completely different than the method as instantly claimed (see the features of appealed claim 1 and 4). Thus, Renoe is inconsistent with the present invention and such inconsistencies have not been accounted for in the outstanding Office Action.

As asserted by Appellant in the reply of March 30, 2004 (starting at page 9), there is no "clear and particular" guidance in Franchini for one of ordinary skill in the art to refer to Renoe. The applicable case law here is *In re Dembiczak*, which holds that while a reference need not expressly teach that the disclosure contained therein should be combined with another, see *Motorola, Inc. v.*

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*Interdigital Tech. Corp.*, the showing of combining references "must be clear and particular". 50 USPQ2d 1614, 1617. Though the November 4, 2004 Office Action refers to how it would be obvious to one of ordinary skill in the art to automate the Franchini method through use of an automated liquid handling system as disclosed in Cunha, Rouse or Renoe (see the Office Action at page 7, lines 1-5 from the bottom), Appellant respectfully disagrees with this assertion. First, such a conclusion does not take into account the inconsistencies between the cited references. Second, a consideration of such inconsistencies reveals that the requisite motivation and reasonable expectation of success are lacking here.

As mentioned, the Renoe disclosure relates to a method for handling sampling that is completely different than method as instantly claimed. Accordingly, Appellant respectfully submits, based on the disclosure of Renoe and Franchini, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in combining these references with any of the other cited references since both have features that are inconsistent with the claimed features. Some other method by combining these references would be generated with such a proposition, and there is no "clear and particular" guidance for one of ordinary skill in the art to even refer to Franchini in order to achieve the present invention.

Renoe further fails to disclose many features of the present invention (such as features 2 (numerical measurement of property as a function of concentration and temperature), 5, 6, 7, 8, 9 and 10 listed in the chart on page 13 of this Brief). Given the deficiencies of the Franchini reference already, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in combining Renoe and Franchini and/or with any of the other cited references since the present invention would still not be produced. There is no guidance in either reference to refer to one another.

Even assuming *arguendo* that it would be possible for a person skilled in the art to replace the manual handling of the samples of the Franchini reference with the automated sampling system disclosed in Renoe, the present invention is not made when the Renoe reference does not even account for the deficiencies of the other primary reference of Franchini or any other cited reference, wherein both of these references fail to disclose all features as instantly claimed (*i.e.*, see steps 5, 6, 7 and 9 above, wherein both fail to disclose such steps of instantly pending claim 1). Neither Franchini nor Renoe discloses the other characteristic parts necessary in the automated method of claim 1 in the present invention. Thus, there is no motivation or reasonable expectation of success for the skilled artisan to combine these references, and Appellant submits that any rejection based on these references is improper.

With regard to the Examiner's comments in the Advisory Action of March 31, 2004, Appellant submits that an analysis under 35 U.S.C. § 103(a) requires a determination of the scope and content of the prior art, *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). In determining the scope and content of the cited Franchini and Renoe references as required by *Graham v. John Deere Co.*, an evaluation of the claimed subject matter as a whole in the light of the differences between claim 1 of the present invention and Franchini and Renoe reveals that both references are limited in scope in disclosing or teaching the present invention. Specifically, there is no disclosure or recognition of the features 2-7 and 9-11 mentioned above in the primary reference of Franchini or features 2 and 5-10 in Renoe. Thus, the instant rejection under 35 U.S.C. § 103(a) is improper, and Appellant respectfully requests the Examiner to reconsider and withdraw this rejection.

(f) Bader

The deficiencies of the cited Bader reference are shown in the above chart on page 13 of this Supplemental Appeal Brief (which are significant).

Bader is concerned with **manual** analyses of an **unknown amount** of a known component with SAMs. The skilled artisan would initially recognize that Bader is fundamentally different from the claimed



invention. Also, Bader is completely silent with regard to creating three-dimensional diagram showing a dependent physical or chemical property as a function of the independent variables concentration and temperature. Further, the method disclosed in the cited Case 5 (see page 5, starting at line 20 of the Office Action) presupposes that the analysis response is proportional to concentration and the responses is plotted in a diagram, from which the unknown concentration is determined. In case 5, the method can be performed either on the same solution, to which additions are made, or on a series of solutions. The method performed on the same solution is said to save time, since the changing of samples are avoided. Thus, the saving in time is related to other SAMs, where the measurements are performed on a series of solutions. However, only one determination of an unknown concentration is obtained in this way, which shows that SAMs generally are rather time consuming, in comparison with, for example, an analysis method wherein the response of a solution with the unknown content is directly compared with previous prepared response curve. In the latter case, all additions of a solution with a known concentration to the solution with the unknown concentration can be avoided and only one measurement is needed.

Thus, there is no teaching or recognition in Bader that the methods described in any manner can be utilized in the creation of a three-dimensional diagram described in the claimed invention. Thus,

Appellant respectfully submits that Bader should not have been cited in the first place.

Further, Bader cannot be properly combined with the other cited references in order to achieve the present invention, like Franchini. The cited Bader reference is completely silent with regard to creating three-dimensional diagrams showing a dependent physical or chemical property as a function of the independent variables concentration and temperature. Thus, this reference does not account for the deficiencies of the other references, including the primary reference of Franchini. Accordingly, Appellant respectfully submits that it is not obvious to a person skilled in the art how to perform an automated method for the creation of a three-dimensional diagram, wherein a physical or chemical property is measured as a dependent variable as a function of temperature and concentration since the disclosure of Bader relates to **quantitative analysis of an unknown concentration**.

Furthermore, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in combining, e.g., Franchini (the primary reference) with Bader, since these references have different objectives and different techniques. Such techniques cannot even be technically combined (for which the Office Action has not accounted). The Office Action (at page 7, lines 14-19) refers to the "matrix effects" and "greater accuracy" based on the method of

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Bader. However, Bader (and Franchini) is still deficient in its disclosure. Furthermore, a true combination of Franchini and Bader cannot even theoretically result in an automatic method, which is the objective of the present invention, since both references relate to **manual** methods. These inconsistencies have not been accounted for in the Office Action, nor in the Advisory Action of March 31, 2004. The Examiner has instead cited some references like Rouse to account for automation, yet the true skilled artisan would not combine the teachings of each of the other cited references. And despite the Examiner's comments in the Advisory Action of March 31, 2004 at page 2, Appellant respectfully refers the Board to the disclosure of Bader as discussed above which counters the Examiner's position of what Bader discloses. Thus, Appellant respectfully and earnestly requests reversal of this rejection based on the cited Bader reference.

The Examiner has also cited some references dealing with the problems related to Standard Addition Methods, SAMs, which are a methodology to make **quantitative analyses**. Thus, the references of Bader and Baxter make theoretical studies of different approaches of SAM or investigations of the validity of specific SAMs (said references are further discussed below). Still, Appellant submits that none of these references describes a process as defined in claim 1 or claim 4. Put differently, there is no disclosure in any of these references of steps 1, 2, 3 and 4 as instantly recited in claim 1 or

4. Since Franchini fails to disclose the mentioned steps as shown in the chart above, Appellant respectfully submits that it is not possible to combine the primary Franchini reference with any of the other cited references so as to obtain a method or device as instantly claimed. And as mentioned, neither Rouse, Baxter, Bader nor Cunha account for the deficiencies of Franchini. Overall, Appellant respectfully submits that all cited references do not describe the methods as instantly claimed.

Accordingly, Appellant respectfully requests the Board to reverse the rejections based on the combinations of Franchini, Rouse, Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg.

(g) Laughlin

Laughlin fails to disclose all ten steps of instantly pending claim 1, as well as dependent claim 4. Thus, Laughlin does not account for the deficiencies of any of the other cited references and has been improperly cited and used in the Office Action.

In contrast to the present invention, Laughlin describes a completely **manual** method to determine the solubility of a surfactant. According to Laughlin, a sample is placed in a tube equipped with a thermometer and the sample is rapidly heated or cooled and continuously stirred to ascertain whether a phase transition exists. If a phase transition is found the sample is heated or cooled past the

transition using baths which are not more than 20-30°C above or below the transition. Then the temperature is allowed to drift back towards room temperature and the sample is **visually** observed and the temperature where the separating phase first appears or last disappears is noted. This process is repeated until a reproducible value is obtained. An aliquot of water is then added to the sample in the tube and the procedure indicated above is repeated. At a concentration of about 15%, an aliquot of 1.5-2g of the composition is transferred to a new tube and the dilution is continued to cover the lower concentration. From the data, the phase transitions are connected to smooth curves to show the boundaries in a **two-dimensional diagram** (see Figure 2 in the article). Laughlin does not provide a numeric value for the cloudiness as a function of temperature and concentration.

The tedious manual method of finding a phase transition and to measure the temperature, at which the phase transmission occurs, disclosed by Laughlin is quite time-consuming. Each reading takes about 15 minutes and the determination of the solubility boundaries takes 1 day. No numeric readings of the dependent property are made. Thus, there are not only an essential difference in the method of producing the data but also between the value of the information given in the two-dimension diagram by Laughlin and a three-dimensional diagram of the present invention (see the three dimensional diagram in

Figure 2 of the present application, which diagram shows a "landscape" of the dependent property). If anything, the skilled artisan would be taught away from achieving the present invention given the time needed for the Laughlin readings.

Thus, one of ordinary skill in the art would not combine the Laughlin reference with Franchini, or any of the other cited references, when Laughlin or Franchini do not disclose automated methods as instantly claimed. There is no "clear and particular" guidance in the cited references for one of ordinary skill in the art to achieve the present invention, especially considering the disclosed manual, time-consuming methods of the references. *In re Dembiczak*. Also, the access to this type of information is very valuable and it is evident that Laughlin did not know how to obtain all these data in a simple and rapid manner. Thus, the skilled artisan would understand the patentable distinctions of the present invention over the Laughlin method (whether combined with Franchini or not).

Further, it would not been obvious to one of ordinary skill in the art upon reading the primary reference of Franchini to use the tedious method of Laughlin, since the latter method does not provide any numeric values of the dependent parameter and a rather poor accuracy in the temperature readings, and any saving of time is, during these circumstances, of no interest. In addition, the Franchini

disclosure has no real advantage of using the dilution process of Laughlin, since the dilution does not affect the time for the sample **to reach the equilibrium**, which seems to be the main cause for the slow process in Franchini.

Overall, it is evident to one having ordinary skill in the art that claims 1 and 4 of the present invention are patentable distinct from Franchini and/or Laughlin (whether combined or not). This is in addition to how Franchini does not disclose any of the process steps 2-6 in claim 1 and Laughlin does not disclose any one of the process steps in claim 1. Further, neither of the two references of Laughlin and Franchini discloses an automated method for the characterization of physical and/or chemical properties as function of temperature and a component concentration as independent variables as instantly claimed.

Accordingly, Appellant respectfully requests the Board to reverse these rejections.

(h) Li

Li fails to disclose all features of claim 1 of the present invention, as well as the features of claim 4. In fact, Appellant respectfully submits that this reference should not have been cited in the first place based on such a deficient disclosure wherein one of ordinary skill in the art would not even refer to this reference.

The cited Li reference is concerned with standard additions and subtractions methods **for the determination of an unknown concentration** of a known component in a solution. This disclosure itself in Li makes any combination with this reference improper in a skilled artisan's efforts to achieve the present invention. As mentioned, the present invention utilizes concentration as an independent variable.

In Li's method, a standard solution is added to one sample and a blank solution with an equal volume of solution of equal ionic strength to another sample. The volumes of the two solutions are the same (see page 1607, left column, last paragraph of the Li reference). When the standard solution or blank solution is added, the ionic strength and concentration are changed. It is also disclosed in Li that the activity coefficients of the ions are the same because of the same variation of the ionic strength in the two instances (also at page 1607, left column, last paragraph). Given this disclosure, Li fails to disclose any and all features as instantly claimed (see also the chart above). Despite the Examiner's comments in the Advisory Action of March 31, 2004 at page 2, Appellant respectfully refers the Board to the Abstract of Li which counters the Examiner's position of what Li discloses.

Further, according to Li, the disclosed method gives greater accuracy than the methods used at present. Given this disclosure, one of ordinary skill in the art would readily understand that Li does not



describe any of the characteristics of the present invention. Thus, the skilled artisan would not be motivated or reasonably expect to be successful in combining the Li reference with Franchini in order to obtain a method in accordance with the invention or even refer to Li in the first place. Li does not even account for the major deficiencies of Franchini or any of the other cited references (*i.e.*, Renoe). Therefore, Li taken alone or when combined with Franchini does not even disclose or recognize the present invention as instantly claimed. Thus, Appellant respectfully and earnestly requests the Board to reverse any rejection citing Li.

Overall, it is evident to one having ordinary skill in the art that claims 1 and 4 of the present invention are patentable distinct from Franchini and/or Li (whether combined or not). This is in addition to how Franchini does not disclose any of the process steps 2-6 in claim 1 and Li does not disclose any one of the process steps in claim 1 or claim 4. Further, neither of the two references of Li and Franchini discloses an automated method for the characterization of physical and/or chemical properties as function of temperature and a component concentration as independent variables as instantly claimed.

Accordingly, Appellant respectfully requests the Board to reverse this rejection based on the combination of Franchini, Rouse, Baxter, Cunha and Li.

(i) Rodriguez

Rodriguez fails to disclose each and every feature as instantly claimed (see the chart above on page 13). Thus, just like the Li reference, Appellant respectfully submits that this reference should not have been cited in the first place based on such a deficient disclosure.

Rodriguez relates to a statistical procedure to validate **analytical** methodology by standard addition methodology (see the Abstract on page 471). Data from three calibration experiments with standard solution, standard additions, and portion of samples are used (see the section titled "Experimental" on page 472 of Rodriguez). This disclosed methodology in Rodriguez is not applicable to the present invention. In the present invention there is no need for the calibrations of analytical measurements, since analytical measurements is not performed. Thus, Appellant respectfully submits that the Rodriguez reference is improperly cited and applied. Further, one of ordinary skill in the art would not even refer to the Rodriguez reference since Rodriguez is directed to analytical measurements (which is not a part of the present invention). To support Appellant's position, the following is submitted.

There are three possible sources of motivation to combine references: the nature of the problem to be solved, the teaching of

the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). Here, Rodriguez is not directed to the same teaching or nature of the problem to be solved as the other cited references nor the present invention. Further, the skilled artisan would not even refer to this reference directed to analytical methodology (see Abstract). Also, despite the Examiner's comments in the Advisory Action of March 31, 2004 at page 2 regarding art and constant volume experiments, Appellant respectfully refers the Board to the enclosed chart showing the deficiencies of Rodriguez. Thus, Appellant respectfully submits that the requisite motivation is lacking with regard to the cited references. Appellant requests reversal of these rejections under 35 U.S.C. § 103(a).

Overall, it is evident to one having ordinary skill in the art that claims 1 and 4 of the present invention are patentable distinct from Franchini and/or Rodriguez (whether combined or not). This is in addition to how Franchini does not disclose any of the process steps 2-6 in claim 1 and Rodriguez does not disclose any one of the process steps in claim 1 or claim 4. Further, neither of the two references of Rodriguez and Franchini discloses an automated method for the characterization of physical and/or chemical properties as function of temperature and a component concentration as independent variables as instantly claimed.

Accordingly, Appellant respectfully requests the Board to reverse these rejections that cite Rodriguez.

(j) Saxberg

Again, Saxberg fails to disclose each and every feature as instantly claimed (see the chart above on page 13). Thus, just like Li and Rodriguez, Appellant respectfully submits that the cited Saxberg reference should not have been cited in the first place based on such a deficient disclosure therein.

Saxberg relates to a generalized standard addition method, whereby this reference discloses the mathematics for simultaneous multidimensional analyses. However, Saxberg is not in any aspect related to the aim or principle of the present invention. For a person skilled in the art, it is not obvious as to how and why this reference is to be combined with Franchini or referred to in the first place. Even if, *arguendo*, Franchini and Saxberg are combined with any of the other cited references, such a combination cannot result in a method as defined in claim 1 or claim 4 of the present invention. This is because Saxberg does not account for the deficiencies of Franchini or any of the other cited references. Thus, Appellant respectfully submits that any rejection citing Saxberg is improper, and request that any rejection based on Saxberg be reversed by the honorable Board.

- c. No prima facie case of obviousness has been established:  
Summary of deficient disclosures and improper combinations  
of references

In summary, Appellant respectfully submits that the cited combinations of references are improper and that a *prima facie* case of obviousness has not been established. Various reasons for Appellant's position of patentability are explained above. For instance, one of ordinary skill in the art, given the (deficient) disclosure of Franchini (see enclosed chart), would not be motivated or reasonably expect to be successful in combining this reference with any of the other cited references in order to achieve the present invention when Franchini describes, e.g., manual methods and fails to disclose or teach any solution to the problem of handling the large amount of data in connection with the creation of a three-dimensional diagram.

As another instance, even though the Examiner is asserting that the Rouse reference accounts for the deficient disclosure of Laughlin (*i.e.*, automation aspect of the rejected claims) (see the Office Action at the paragraph bridging pages 7-8), the Examiner has still not accounted for the inconsistencies between Rouse and Franchini, nor has the Examiner accounted for the deficient disclosure of the other cited references. It is not seen how one of ordinary skill in the art can overcome such inconsistencies. In this regard, Appellant

respectfully refers the Board to the chart on page 13 herein. Thus, Appellant submits that the outstanding rejections are improper and earnestly request reversal of these rejections by the Board.

**d. Other reasons why references are improperly combined & improper hindsight reconstruction**

*(1) Improper rationale or reasons for combining references*

At the page 7, starting at line 14 of the November 4, 2004 Office Action, the Examiner alleges that it would have been obvious at the time the invention was made to replace the "successive dilutions" of Franchini with the "successive additions" of an analyte containing a solution of known concentration according to the teachings of Rouse, Bader, Li, Rodriguez or Saxberg because of the reductions of interference due to the matrix effects and the greater accuracy through use of a standard additions method as taught by Bader, Li, Rodriguez and Saxberg. The next sentence in the Office Action refers to "successive dilutions" of Franchini and "stepwise dilutions" of Rouse or Laughlin. Appellant respectfully traverses such conclusions.

First, the terms "successive dilutions," "successive additions" and "stepwise dilutions" have no clear meaning as used in the Office Action, and Applicants have not argued the patentability of such terms.

Second, it should be observed (and Appellant has previously submitted) that Franchini makes successive dilutions of a solution containing a **known** amount of a **known** compound and perform conductance readings at known concentrations and at known temperatures. A standard addition method (SAM) is a well-known quantitative method of analysis. In such a method, one successive addition of an analyte with a known concentration is added to a sample containing an **unknown** concentration of the analyte. An analytical response is measured before and after each addition. By guidance of the responses it is possible to calculate the **unknown** concentration. The SAM may results in improved accuracy in the termination of the unknown concentration.

However, any improved accuracy is not a valid reason to combine Franchini with any of the cited SAM references when Franchini analyses of compounds or their contents are **not performed**. One having ordinary skill in this art would recognize such an inconsistency. In other words, the problem solved with SAM is not a problem, when creating 3-dimensional diagram showing a physical and chemical properties as a function of concentration and temperature. Thus, Appellant respectfully submits that the cited references have been improperly combined.

Further, each of the cited references is deficient in some respect and cannot account for the deficiencies of each other. Even if, for example, Franchini is combined with the other cited

references, such a combination still would not disclose all instantly claimed features of the present invention.

Appellant also traverses the application of *In re Venner*, 120 USPQ 192 (CCPA 1958), in paragraph 4 of the Office Action. The factual situation in *Venner* is not only significantly different from the present circumstances, the Examiner has not shown sufficient reasons as to why automation could be applied to the technology of the present invention. *Venner* refers to "broadly" providing an automatic or mechanical means in replacing manual activity. However, the Examiner has not even accounted for any manual activity of all claimed features in the instant rejections. In other words, the Examiner has not identified the manual activity to be replaced. Further, the Examiner has not established that the present invention has "broadly" provided a mechanical or automatic means of replacing some manual activity. Further, there is no evidence presented by the Examiner to show that the process of the present invention produces the same result as the manual means. If anything, the results are not the same. Thus, the instantly claimed method is not a "translation" of the manual method described in, e.g., Franchini (which has been improperly cited in the first place). Instead, the present invention (e.g., claim 1) describes a unique combination of steps and features that are not disclosed or taught in any of the cited combinations of references, and (inappropriately) applying *Venner* does not take away from such a



unique combination. Thus, the Examiner has incorrectly applied the *Venner* case because the facts are different, the holding does not apply to the instant present invention and corresponding technology, there is no showing of a broad automatic means is being made, and no evidence has been provided that the results are the same. The *Venner* case has been inappropriately cited and applied in the instant rejections.

(2) *Impermissible hindsight reconstruction*

Appellant also submits that the Franchini reference has been combined with the other cited references based on substantial and impermissible hindsight reconstruction. See, e.g., *In re Gorman*, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991) (citing *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985)). Appellant is aware that some hindsight is permissible. However, Appellant is asserting that substantial and an impermissible level of hindsight reconstruction has been applied against the present application, and not just some acceptable amount thereof. See, e.g., *In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988); see also *In re Deuel*, 34 USPQ2d 1210, 1215 (Fed. Cir. 1995).

The question here is if the skilled artisan having no knowledge of the actual invention **would have found it obvious** to combine the cited references in such a manner to achieve the present invention.

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Appellant submits that many inventions are, after their presentation, easy to understand, including any benefits or advantages thereof. Therefore, it is normally easy to search in certain literature for pieces of information and to put them together, even in a manner not suggested. It is also easy to overlook under which circumstances the pieces of information were disclosed. Appellant respectfully submits that this is the situation here. Here, Appellant submits that it is not acceptable to show that certain pieces of information **could** have been combined by a person skilled in the art given the disclosure of each of the cited references of Franchini, Rouse, Baxter, Cunha, Bader, etc. This is not the standard under 35 U.S.C. § 103(a), and Appellant respectfully requests that this rejection be reversed due to the amount of hindsight reasoning that has been applied.

Also, the Office Action in the paragraph bridging pages 7-8 and paragraph 7 on page 10 of the Office Action are full of hindsight reasoning where arguments are phrased and the references subjectively interpreted in order to match on certain characteristics of the claims. For example, at page 5 of the Office Action, the Examiner isolates certain pieces of information from the actual disclosure of Bader. Instead, there appears to be no recognition of the fact that the Bader reference relates to a **manual** method of determining the concentration of a **known component** in a sample by making a **plurality of additions** of a solution containing a known concentration to said

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sample and a **plurality of measurements** after each addition for determining the unknown concentration in the original sample. The disclosure of Bader is not even concerned with the automatic creations of three-dimensional diagram with concentration and temperature as independent variables. As another instance, there appears to be no recognition that the advantage in time refers **only** to other SAMs, and that measurements of an unknown concentration can more easily be made with just one measurement without any plurality of additions of a solution with a known concentrate and that no measurements of any concentration is performed in the present information. Thus, Appellant respectfully submits that only parts of the cited references have been applied, wherein other essential parts and objectives of these references (i.e., the manual method of Bader) are not properly considered within the context of achieving the present invention.

Therefore, Appellant respectfully submits that substantial and an impermissible level of hindsight reconstruction has been applied in the November 4, 2004 Office Action regarding the present patent application. Such hindsight reconstruction is improper. *In re Fine*. Still, even if assuming that all of the cited references could be combined (Franchini, etc.), there is still no disclosure of all of the necessary characteristics (see the features as instantly claimed). The present invention would still not be achieved. Thus, reversal of these rejections by the honorable Board is respectfully requested.

(3) Concluding Remarks

The Examiner has overall failed to establish a *prima facie* case of obviousness. For instance, there is no reference that relates to the objectives of the present invention and even develops an automated method to produce a three-dimensional diagram. The cited primary reference of Franchini discloses that because of the large amount of data involved, they had to make an empirical approach to the problem. This indicates that it was not obvious to the Franchini et al. team as to how the problem with large amounts of data could be handled. This is an apparent inconsistency with the present invention. Nor has any one of the other cited references (*i.e.*, Rouse; Cunha; etc.) made any suggestions how to solve the objective of the present invention. Appellant further notes that the benefits of the invention are evident, especially in light of how most of the references have been published in the seventies or eighties. It is apparent to one of ordinary skill in the art that no one else has understood how to achieve the present invention, despite the disclosure of all of the cited references. Furthermore, any such combination would still not disclose all features as instantly claimed (please refer to the chart on page 13). Thus, not even the initial requirement of disclosure of all claimed features for a *prima facie* case of obviousness has been satisfied. Appellant also maintains that the requisite motivation

and/or reasonable expectation of success are lacking. Reversal of all rejections is respectfully requested.

e. Unexpected Results as a Rebuttal to the Asserted *Prima Facie* Cases of Obviousness

Appellant initially submits that that the cited combinations of the several references are improper, and that a showing of unexpected results is not necessary to overcome the rejection. Still, Appellant respectfully submits that unexpected results do exist for the present invention, whereby these unexpected results rebuts any asserted *prima facie* case of obviousness based on the cited combinations of references.

The large and unexpected advantage with the present invention is that the dependent variable or variables can rapidly be measured as a function of the two independent variables, temperature and concentration, over a large temperature and concentration ranges in a large number of measuring points without the involvement of people (this is explained by Appellant previously in the reply dated April 18, 2002, at pages 2-3). Hassle and human error in handling a large number of samples is completely avoided.

In addition to the above advantages, all the measuring points and the values of the variables are obtained in electronic format and thus can easily be electronically stored in a computer and coordinated for

displaying the results in three-dimensional diagrams. Such diagrams can then be analyzed, which may indicate where two or more phases co-exist in a mixture (as discussed by Appellant in the specification at page 6, starting at line 1). With the present invention, different combinations of data from measurements in turbidity, pH, etc., advantageously offer knowledge about the state of aggregation of dissolved species (*i.e.*, liquid crystalline phases) as a result of changes in the independent variable of concentration or temperature (see the paragraph bridging pages 5-6 of the specification and Appellant's reply of April 3, 2003 at pages 3-5). Such advantages are not within the disclosure of the cited combinations of references.

Overall, the unexpected advantages of the present invention include the minimum expenditure of time and labor in obtaining data in a form that allows an overview of the dependent variables over a wide range of temperature and concentration values. Further, the present invention has achieved a method and device that simplifies a procedure for three-dimensional diagramming, including phase diagramming (*i.e.*, see the features of independent claims 1 and 7) since the independent variables of temperature and concentration component are predetermined and adjusted by program controls (as explained in Appellant's reply filed April 18, 2002 at page 2, lines 8-23).

The November 4, 2004 Office Action appears to believe that the primary reference of Franchini is the closest prior art (Appellant has previously requested clarification if this is not the case in the reply of March 3, 2004 at page 30, and no answer has been provided). Franchini discloses a three-dimensional diagram of the type referred to in the present invention. The cited Rouse reference appears to be close, which relates to an automated method.

Still, a hypothetical combination of Franchini and Rouse would still not result in a method as instantly claimed. First, such an asserted prior art combination will have to handle a large number of samples (in contrast to the present invention having only one sample), which is prepared directly in the measuring cell under the creation of the three-dimensional diagram. Thus, in contrast to Franchini and Rouse, the present invention results in a simpler device and faster measurements. Furthermore, the combined method would only be partially automated and a large amount of data still has to be handled manually. This proposal is in contrast with the present invention.

Appellant respectfully further submits that none of the cited references describes an automated device having the ability to make all the necessary measurements and to create a three-dimensional diagram, where at least one dependent physical or chemical property is measured and illustrated as a function of the two independent variables, temperature and concentration. The need for such a device

is obvious, but no one has been able to find a solution on this problem for decades. This fact alone is strong evidence that the present invention has both novelty and inventive merit.

Thus, Appellant respectfully submits that the present invention has achieved unexpected results that rebut the asserted *prima facie* case of obviousness with regard to the cited combinations of references. Reversal of these rejections under 35 U.S.C. § 103(a) is respectfully requested.

Besides the unexpected results of the present invention, Appellant herein requests consideration of all evidence of patentability on record, including the arguments of patentability presented herein.

## 2. Appealed claims 2 and 5

Appellant respectfully asserts that the cited combinations of Franchini, in view of Rouse (newly cited and applied), Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg do not render claims 2 and 5 as obvious as follows.

Claim 2 recites the following elements of the present invention:

Claim 2. A method according to Claim 1, characterised in that, A method according to Claim 1, characterised in that, a **series of measurements are done under rising temperature**, and **following series of measurements are done under decreasing temperatures** and **vice versa**.



Claim 5 recites the following elements of the present invention:

Claim 5. A method according to Claim 1, characterised in that, **the temperature of each measuring point is measured simultaneously wit the physical and/or chemical property.**

The features in claim 2 also at issue are seen from the claim language: "a series of measurements are done under rising temperature," "following series of measurements are done under decreasing temperatures", and "vice versa". The features in claim 5 are seen from the claim language: "the temperature of each measuring point is measured simultaneously wit(h) the physical and/or chemical property".

All of the arguments presented above for claims 1 and 4 (Group I) apply to claims 2 and 5 as well since each of claims 2 and 5 includes the embodiment of claim 1, but with more patentably distinct features. Even assuming, *arguendo*, that all previously stated arguments are unpersuasive, Appellant asserts that each of the cited combinations of references still lacks disclosure of the claimed methods as recited in claims 2 and 5. For instance, there is no disclosure in any of the cited references (nor a suggestion of) the temperature features of claims 2 and 5, such as the claim language of "series of measurements are done under rising temperature" of claim 2.

Appellant further notes that in the November 4, 2004 Office Action, the Examiner has not cited any parts of the cited references as disclosing the claimed features of claims 2 and 5.

Thus, Appellant respectfully submits that each of claims 2 and 5 is patentable distinct from the cited combinations of references. Reversal of all rejections of claims 2 and 5 from the Board is respectfully requested.

**3. Appealed claim 6**

Appellant asserts that the cited combinations of Franchini, in view of Rouse (newly cited and applied), Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg do not render claim 6 as obvious as follows.

Claim 6 recites the following elements of the present invention:

Claim 6. A method according to Claim 1, characterised in that, **the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight.**

The features in claim 6 also at issue are seen from the claim language: "the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight".

All of the arguments presented above for claims 1 and 4 (Group I) apply to the invention of claim 6 as well since claim 6 includes the embodiment of claim 1, but with more patentably distinct features. Even assuming, *arguendo*, that all arguments in Group I are unpersuasive, Appellant asserts that the cited combinations of references still lack disclosure of the claimed methods as recited in claim 6. For instance, there is no disclosure in any of the cited references (nor a suggestion of) the concentration features of claim 6, such as the claim language of "the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight" of claim 6.

Appellant further notes that in the November 4, 2004 Office Action, the Examiner has not cited any parts of the cited references as disclosing the claimed features of claim 6.

Thus, Appellant respectfully submits that the invention of claim 6 is patentable distinct from the cited combinations of references. Reversal of all rejections of claim 6 is respectfully requested.

**4. Appealed claims 7, 8 and 10**

Appellant asserts that the cited combinations of Franchini, in view of Rouse (newly cited and applied), Baxter and Cunha or Renoe and Bader, Laughlin, Li, Rodriguez or Saxberg do not render claims 7, 8 and 10 as obvious as follows.

Claim 7 recites the following elements of the present invention:

Claim 7. A device for the characterisation of the physical and/or chemical properties of a liquid, characterised in that, it comprises

a) a measuring cell (1) provided with

i) an equipment (2) for the homogenisation of a liquid,

ii) at least two control equipment (3, 17), which comprise or are attached to control programs for changing of the two independent variables, component concentration and temperature, in a predetermined manner, the control equipment (3) of the component concentration comprising a dosage organ for the addition of another liquid containing a different component concentration to the measuring cell,

iii) at least one measuring organ (9, 13, 14) for the determination of at least one dependent physical and/or chemical property of the liquid, and

iv) optionally a measuring organ (15) for the determination of the temperature,

b) at least one computer (5) for

i) the reception and storage of data relating to the dependent and independent variables via at least one electronic circuit (11', 12', 13', 14', 15') and the calculation of at least the component concentration from data obtained from the control program and

ii) compilation of the received and calculated values into three-dimensional measuring points and

c) equipment (16) for visualisation of the measuring points stored in the computer in a three-dimensional diagram.  
Claim 8 recites the following elements of the present invention:

Claim 8. A device according to Claim 7, characterised in that, the equipment for the control of the temperature of the fluid comprises **a jacket (17) or a heating coil** for the cooling and/or heating by means of a heat transfer medium, whereby **cooling and heating is controlled by a program in the computer (5)**.

Claim 10 recites the following elements of the present invention:

Claim 10. A device according to Claim 7, distinguished by the fact that **control programs are included in the computer (5)**.

The features in claim 7 also at issue are seen from the claim language regarding the measuring cell, the various equipment and control equipment, measuring organs, computer, etc. The features in claim 8 are seen from the claim language: "cooling and heating is controlled by the program in the computer (5)". With regard to claim 10, Appellant respectfully refers the Board to the bolded claim language above.

All of the arguments presented above for claims 1 and 4 (Group I) apply to these claims as well since claims 7, 8 and 10 are rejected under the same set of combinations of references and have similar features as appealed claim 1. Even assuming, *arguendo*, that all previously stated arguments are unpersuasive, Appellant asserts that the cited combinations of references still lack disclosure of

the claimed devices as recited in claims 7, 8 and 10. For instance, there is no disclosure in any of the cited references (nor a suggestion) of the measuring cell having at least two control equipment (3, 17), which comprise or are attached to control programs for changing of the two independent variables of component concentration and temperature as claimed (see claim 7).

Appellant further notes that in the November 4, 2004 Office Action, the Examiner has not cited any parts of the cited references as disclosing the claimed features of each of claims 7, 8 and 10.

Thus, Appellant respectfully submits that each of claims 7, 8 and 10 is patentable distinct from the cited combinations of references. Reversal of all rejections of these claims from the Board is respectfully requested.

**B. SECOND GROUND OF REJECTION: The combination of Rouse, Ajith and Inoue (all references newly cited and applied)**

Appellant asserts that the instant rejection should be reversed based on any one and all of the following:

- The cited combination of references fails to disclose all claimed features;

- One having ordinary skill in the art would not be motivated in combining the cited references in order to achieve the present invention;
- One having ordinary skill in the art would not be reasonably expect to be successful in combining the cited references in order to achieve the present invention; and
- Unexpected results exist for the present invention, whereby such unexpected results rebut any asserted *prima facie* case of obviousness.

More specifically, claims 1-2, 4-8 and 10 are patentable over the cited combination of Rouse, Ajith and Inoue because the cited references, even when combined, fail to disclose all features as instantly claimed. Further, the cited references have been improperly combined since a person having ordinary skill in the art at the time of filing the present application, and upon reading the cited references, would not be motivated or reasonably expect to be successful in combining the cited references in order to achieve the present invention due to inconsistencies between the references. Further, the present invention has achieved unexpected results of a more efficient and improved method and device, which rebuts any asserted *prima facie* case of obviousness.

**1. Appealed claims 1 and 4**

With regard to appealed claim 1 and the dependent claim 4, the cited combination of references fails to describe the present invention's features and advantages.

The present invention allows the determination of dependent physical and/or chemical properties simultaneously, wherein there is an access of a large number of measuring points of physical or chemical properties. Note that in, e.g., step 3) of appealed claim 1, the component concentration in the measuring cell is varied when adding a predetermined amount of another liquid into the measuring cell, wherein the other liquid contains a different component concentration. Thus, the component concentration, as well as the temperature, are varied in a predetermined fashion. And as recited in step 5) of appealed claim 1, the values for the dependent properties are combined with the values of the independent properties and made into measuring points. After obtaining an adequate number of measuring points, the physical and/or chemical properties of a liquid or solution can be characterized, wherein such characterization is in essence, measuring points electronically taken, stored and coordinated, and then visualized via a computerized three-dimensional diagram (i.e., a phase diagram of the liquid) (see Fig. 3 of Appellant's specification).

With regard to these features of the present invention, Appellant respectfully submits that the cited combination of references fails to



describe the features of, or motivate or make one of ordinary skill in the art reasonably expect to be successful in achieving, the present invention of the characterization of physical and/or chemical properties of a liquid wherein one dependent physical and/or chemical property of a liquid is measured as a function of both temperature and component concentration, and are controlled within selected ranges in order to obtain a wanted number of values (as asserted by Appellant previously; see, e.g., the reply filed March 3, 2004, starting at page 3, which includes a graph comparing the present invention with the cited references).

U.S. case law squarely holds that a proper obviousness inquiry requires consideration of three factors: (1) the prior art reference (or references when combined) must teach or suggest all the claim limitations; (2) whether or not the prior art would have taught, motivated, or suggested to those of ordinary skill in the art that they should make the claimed invention (or practice the invention in case of a claimed method or process); and (3) whether the prior art establishes that in making the claimed invention (or practicing the invention in case of a claimed method or process), there would have been a reasonable expectation of success. See *In re Vaeck*; see also *In re Kotzab*; *In re Fine*. With regard to Appellant's position of patentability, Appellant respectfully submits that not all requirements for a *prima facie* case of obviousness have been satisfied based on the

cited combinations of references, and thus the cited references have been improperly combined.

a. A prima facie case of obviousness has not been established:

Summary of lack of disclosure of all claimed features

Below is a chart summarizing how each and every one of the cited references, as well as the combination thereof, is deficient in disclosing all claimed features. The chart as shown is being submitted in response to the new rejection in the Office Action of November 4, 2004 (each of Rouse, Ajith and Inoue is newly cited and applied). Appealed claim 1 recites, at a minimum, all of the below features 1-11. Though there are six steps recited in appealed claim 1, there are at least the 11 features as shown in these steps. As can be seen from the chart below, a prima facie case of obviousness has not been established since the asserted combination of references fails to suggest, teach or disclose all features as instantly claimed. *In re Vaeck*.

Characteristics of the Invention As <u>CLAIMED</u>		COMPARATIVE CHART: Claim 1 of present invention v. Rouse, Ajith and Inoue			
No.	Feature	Claim 1 of Application No. 09/381,828	Rouse	Ajith	Inoue
1	Automated	Yes	Yes	No	No
2	Numerical measurement of property as a function of concentration and temperature	Yes	No	No <sup>1</sup>	Yes
3	Concentration is changed according to computerized control program and	Yes	No <sup>4</sup>	No	No

Characteristics of the Invention As <u>CLAIMED</u>		COMPARATIVE CHART: Claim 1 of present invention v. Rouse, Ajith and Inoue			
4	calculated from the program by a computer	Yes	No <sup>4</sup>	No	No
5	Temperature is changed by a temperature control program and	Yes	No	No	Yes <sup>5</sup>
6	temperature is calculated from the program or by measurements	Yes	No	No	Yes <sup>5</sup>
7	Concentration is changed by addition directly into the measuring cell according to the control program for concentration	Yes	No <sup>4</sup>	No	No
8	Measurements of the dependent property within the temperature range for each concentration level	Yes	No	No	No <sup>6</sup>
9	Values of the property are combined with the independent variables by the computer	Yes	No	No	No
10	and the measuring points in the computer are coordinated and visualized in a 3-dimensional diagram	Yes	Yes	No	No
11	Determination of concentration from the control program	Yes	Yes	No	No

1 no numerical measurements

4 samples were manually produced

5 surfactant manually changed

6 only for one concentration at a time

For instance, Appellant respectfully refers the Board to the features labeled as No. 3, 4, 7, 8 and 9 of the present invention in the chart, wherein the cited combination fails to disclose each of these numbered features of the invention.

2. A Prima Facie Case of Obviousness Has Not Been Established: disclosure and teachings of references and reasons for no motivation and/or reasonable expectation of success

Appellant respectfully submits that each and every reference has been improperly combined with one another and all requirements for a *prima facie* case of obviousness have not been satisfied (i.e., lack of disclosure of all claimed features, lack of requisite motivation and lack of requisite reasonable expectation of success). The requirements for a *prima facie* case of obviousness are addressed below.

*(a) Lack of Disclosure of All Features As Instantly Claimed*

As can be seen from the above chart (on page 73 of this Brief), not even the cited combination of references discloses all features as instantly claimed. For example, no cited reference (even when combined with other cited references) discloses the claim language labeled as No. 3 (concentration is changed according to a computerized control program), 4, 7, 8 or 9. Thus, not even the initial requirement for a *prima facie* case of obviousness has been met (i.e., disclosure of all claimed features), and for this reason alone, Appellant requests reversal of this rejection under 35 U.S.C. § 103(a). See *In re Vaeck*.

Appellant adds that accounting for such a lack of disclosure is not obvious to one of ordinary skill in the art (for the reasons stated below) since the Examiner has not provided sufficient evidence to prove otherwise that rebuts Appellant's presumption of patentability. Thus, reversal of this ground of rejection is

respectfully requested for the reason that the cited combination of references fails to satisfy the requirement of disclosure of all claimed features of the present invention for establishing a *prima facie* case of obviousness.

(b) *Lack of the Requisite Motivation and Reasonable Expectation of Success*

Appellant herein discusses the actual disclosure of each of the cited references with regard to the present invention, including how each of the references solves its problems. Overall, based on such disclosure in the cited references, Appellant submits that the references have been improperly combined by the Examiner, wherein the requisite motivation and/or reasonable expectation of success are lacking, and that a *prima facie* case of obviousness has not been established. Wherein the chart above (page 73) supports Appellant's position, Appellant submits that any cited combination of these references is improper.

(i) Disclosure in Rouse, Ajith and Inoue

Rouse is the primary reference in this ground of rejection. Rouse relates to an automated titration system for generating data to construct phase diagrams related to microemulsions (see Abstract). In the Rouse procedure, a microemulsion (a clear liquid) is first

titrated with an oil until the sample turns cloudy (see page 3, lines 13+ of the Office Action). The sample is then dosed with a cosurfactant in quantity that is **more than enough** to clear the sample. The sample is again titrated with oil and the procedure continues until the sample no longer clears up, when adding the cosurfactant. Thus, the additions of oil and cosurfactant are unpredictable. The values obtained in Rouse is based on the concentration of the surfactant in the original sample. In order to obtain new values, new samples with another concentration of the surfactant have to be prepared and the whole process for collecting data has to be repeated. Each sample is provided with an individual set up and operating instructions (which is also not the present invention). Furthermore, the different samples are handled by a sample change unit with up to 16 samples and a sample lift station (which is not the present invention).

The cited secondary reference of Ajith is interested in phase changes of a pseudoternary system of alkane/surfactant + propanol/water. The effect of NaCl is studied on an anionic surfactant-containing microemulsion at various temperatures. According to the Ajith article, a number of compositions were manually prepared and the cloud point of each composition were determined in a water bath. The technique used in the preparation of the samples on which

the diagram 6a and 6b in Ajith is similar to the one used by Franchini.

Inoue is a cited secondary reference. The subject of the Inoue reference was to clarify the mechanism between mixed micelles and vesicles. It was found that the solubilization of DPPV vesicles was effected by the addition of a nonionic surfactant (hexaethylene glycol decyl ether; or  $C_{10}E_6$ ). In order to gain more information, a solubilizing process of the DPPC vesicles was induced by stepwise addition of  $C_{10}E_6$  and followed by measuring the scattering-light intensity from vesicles. The initial DPPC concentration was varied in the range from 2.4 to 12.0 mM, which means that cuvettes with different concentrations of DPPC also have to be analyzed. In Inoue, the cuvettes are manually replaced.

With regard to the measurements at different temperatures (page 312, last full paragraph) as cited by the Examiner (see page 9, lines 20-25 of the November 4<sup>th</sup> Office Action) in Inoue, it is clear that the measurements were performed on different mixtures, wherein the DPPC concentration was kept constant (namely 7.2 mM). In the later measurements, the different compositions were produced one by one.

Also, the DSC measurements in Inoue were performed on samples, which were prepared one by one by mixing the DPPC suspension and the surfactant solution to give the desired composition of the mixture. Each sample was then placed in an aluminum sample pan for testing.

- (ii) One of ordinary skill in the art would not be motivated in using the teachings of each cited reference in order to achieve the present invention

Thus, one of ordinary skill in the art would recognize, upon understanding the present invention and reading the Rouse reference, that the aim, method and equipment of Rouse essentially differ from that of the present invention. The present invention (as recited in claim 1) relates to the creation of a three-dimensional diagram with temperature and concentration as independent variables and a physical or chemical property as the dependent variable. The newly cited Rouse reference does not disclose or recognize any three-dimensional system of this kind. Further, according to the present invention, all preparation of samples are made directly in the measuring cell in a predetermined manner by a computerized control program for the concentration without the need of a sample change unit. However, a sample lift station and producing new starting samples are required in Rouse. Thus, the skilled artisan would recognize that the present invention is significantly different in aim, method and equipment used for the present invention versus that in Rouse. Accordingly, despite the assertions in paragraphs 5 and 7 of the Office Action, Rouse is inconsistent with the present invention, and such inconsistencies have not been accounted for in the outstanding Office Action. Instead, the



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Examiner cites parts of Rouse without the proper reading of the entire disclosure of the reference in determining of the scope and content of the prior art. See *Graham v. John Deere Co.*

Similarly, the Examiner has not accounted for the entire teachings of Ajith, and how this reference is so inconsistent with Rouse and Inoue (and the present invention) that one of ordinary skill in the art would not combine such disclosures in order to achieve the presently claimed invention. The Ajith reference describes a manual process, and fails to disclose the automatic preparation of compositions in the measuring cell and the measuring of the turbidity for each composition in the measuring cell within a predetermined temperature range in accordance with the present invention. In fact, Appellant respectfully submits that one of ordinary skill in the art would not refer to Ajith at all, and do not understand why this reference is even cited in the Office Action. Appellant also respectfully refer the Board to the enclosed chart on page 69 herein, which shows the complete deficiency of the Ajith reference.

In this regard, Appellant respectfully submits that there is no "clear and particular" guidance in Rouse for one of ordinary skill in the art to refer to Ajith and vice versa. The applicable case law here is *In re Dembiczak*, which holds that while a reference need not expressly teach that the disclosure contained therein should be

combined with another, see *Motorola, Inc. v. Interdigital Tech. Corp.*, the showing of combining references "must be clear and particular". 50 USPQ2d at 1617. Though the Office Action refers to how it would be obvious to one of ordinary skill in the art to modify the Rouse device and method with means and steps to include a temperature as an independent variable as taught by Ajith (see the November 4, 2004 Office Action at page 9, last paragraph), Appellant respectfully and heavily disagrees with these assertions.

First, this is an over-simplification on the Examiner's part regarding the disclosure and teachings of the references, and such a conclusion does not take into account the inconsistencies between the cited references and between those references and the present invention. For instance, the amounts of additions of oil and cosurfactant in Rouse were unpredicted and made in order to discover a phase border and to produce a completely different type of diagram that does not even correspond to the present invention.

Second, it is not even clear in the Office Action as to why one of ordinary skill in the art would refer to the Ajith reference, upon reading Rouse, when the Examiner states, for example, that Rouse has multiple samples performed, each having an individual setup and operating instructions (page 8, lines 13-14 of the Office Action). The Rouse disclosure does not even correspond to the claimed invention that uses all sample preparations which are directly made in the

measuring cell in a predetermined manner by a computerized control program for the concentration (without the need of a sample change unit like Rouse). Rouse has been improperly combined with Ajith.

Likewise, the Examiner has not accounted for the entire teachings of Inoue, and how this reference is so inconsistent with Rouse and Ajith (and the present invention) that one of ordinary skill in the art would not combine such disclosures in order to achieve the presently claimed invention. Based upon the disclosure in Inoue, the aim and workings of the claimed invention exhibit substantial differences in comparison with the disclosure in Inoue. In Inoue, all new samples have to be produced manually and installed in the measuring devices. At best, Inoue would be similar to the disclosure to Franchini, but Franchini (as Appellant explains above) cannot be combined with the teachings of Rouse.

In fact, a combination of the disclosure or teachings in Rouse, Ajith and Inoue cannot result in a process as instantly claimed. This is because, for example, the automation system in Rouse does not disclose the principles (Rouse involved unpredictable additions of oil and cosurfactant in order to discover a phase border, and producing a completely different type of diagram versus the present invention) and steps (all references even when combined fail to disclose the multiple features of the present invention as shown in the chart on page 69 of this Brief) of the present invention. Adding

the disclosure or teachings of the secondary references does not solve such deficiencies, nor is the present invention produced (see chart on page 69). For instance, Ajith merely describes a manual process, and further fails to disclose an automatic preparation of compositions in a measuring cell and fails to disclose measuring the turbidity for each composition in the measuring cell within a predetermined temperature range (as achieved by the present invention).

Thus, a consideration of such inconsistencies reveals that the requisite motivation and reasonable expectation of success are lacking here. Appellant respectfully submits, based on the disclosure of Rouse, Ajith and Inoue, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in combining these references since such a combination still does not achieve the present invention, and the references disclose features that are inconsistent with each other and the instantly claimed features. Some other method by combining these references would be generated with such a proposition, and there is no "clear and particular" guidance for one of ordinary skill in the art to even refer to Rouse and/or the other references in order to achieve the present invention.

Appellant also respectfully refers the Board to the comparative chart provided above (on page 69), wherein the Examiner has yet to produce a reference that shows automation of all instantly claimed

features. Instead, the Examiner discusses the disclosure of individual references and merely concludes the cited references could be combined to achieve the claimed invention despite the different and/or contrary teachings of each reference. Appellant respectfully submits that one of ordinary skill in the art upon reading such teachings in the references, such as Rouse and Ajith, would still not produce the claimed invention since the references are technologically inconsistent with each other and do not disclose all instantly claimed features. For instance, the technological explanation above shows how one of ordinary skill in the art would not combine the teachings of Rouse with that of Ajith in an attempt to achieve the present invention.

Appellant also objects to the reopening of prosecution after Appellant filed the Notice of Appeal with the proper Appeal Brief (filed July 6, 2004). This is because the newly cited references and combinations thereof come no closer to the present invention, and the cited references have still been improperly combined. Further, the newly cited references and the formation of a new rejection in paragraph 5 of the Office Action is not in response to Appellant adding or amending any of the pending claims. The scope of the pending claims has not changed since Appellant's Reply of October 3, 2002.

Accordingly, reversal of this rejection by the Board is respectfully requested.

c. Impermissible hindsight reconstruction

Appellant also submits that the Rouse reference has been combined with Ajith and Inoue based on substantial and impermissible hindsight reconstruction. See, e.g., *In re Gorman*, 18 USPQ2d 1885, 1888. Appellant is aware that some hindsight is permissible. However, Appellant is asserting that substantial and an impermissible level of hindsight reconstruction has been applied against the present application, and not just some acceptable amount thereof. See, e.g., *In re Fine*; see also *In re Deuel*.

The question here is if the skilled artisan having no knowledge of the actual invention **would have found it obvious** to combine the cited references in such a manner to achieve the present invention. Appellant submits that many inventions are, after their presentation, easy to understand, including any benefits or advantages thereof. Therefore, it is normally easy to search in certain literature for pieces of information and to put them together, even in a manner not suggested. It is also easy to overlook under which circumstances the pieces of information were disclosed. Appellant respectfully submits that this is the situation here. Here, Appellant submits that it is not acceptable to show that certain pieces of information **could** have

been combined by a person skilled in the art given the disclosure of each of the cited references of Rouse, Ajith and Inoue. This is not the standard under 35 U.S.C. § 103(a), and Appellant respectfully requests that this rejection be reversed due to the amount of hindsight reasoning that has been applied.

Also, the Office Action in paragraphs 5 and 7 are full of hindsight reasoning where arguments are phrased and the references subjectively interpreted in order to match on certain characteristics of the claims. The disclosure of Ajith and Inoue are not even concerned with the automatic creations of three-dimensional diagram with concentration and temperature as independent variables. Further, Rouse involves unpredictable and not controlled additions of oil and surfactant. Thus, Appellant respectfully submits that only parts of the cited references have been applied, wherein other essential parts and objectives of these references (*i.e.*, the manual method of Ajith) are not properly considered in the context of producing the present invention.

Therefore, Appellant respectfully submits that substantial and an impermissible level of hindsight reconstruction has been applied in the Office Action regarding the present patent application. Such hindsight reconstruction is improper. *In re Fine*. Still, even if assuming that all of the cited references could be combined (Rouse, etc.), there is still no disclosure of all of the necessary

characteristics (see the features as instantly claimed). The present invention would still not be achieved. Therefore, reversal of this rejection by the honorable Board is respectfully requested.

**d. Unexpected Results as a Rebuttal to the Asserted *Prima Facie* Cases of Obviousness**

Appellant initially submits that that the cited combinations of the several references are improper, and that a showing of unexpected results is not necessary to overcome the rejection. Still, Appellant respectfully submits that unexpected results do exist for the present invention, whereby these unexpected results rebuts any asserted *prima facie* case of obviousness based on the cited combinations of references.

The large and unexpected advantage with the present invention is that the dependent variable or variables can rapidly be measured as a function of the two independent variables, temperature and concentration, over a large temperature and concentration ranges in a large number of measuring points without the involvement of people (this is explained by Appellant previously in the reply dated April 18, 2002, at pages 2-3). Hassle and human error in handling a large number of samples is completely avoided.

In addition to the above advantages, all the measuring points and the values of the variables are obtained in electronic format and thus



can easily be electronically stored in a computer and coordinated for displaying the results in three-dimensional diagrams. Such diagrams can then be analyzed, which may indicate where two or more phases co-exist in a mixture (as discussed by Appellant in the specification at page 6, starting at line 1). With the present invention, different combinations of data from measurements in turbidity, pH, etc., advantageously offer knowledge about the state of aggregation of dissolved species (i.e., liquid crystalline phases) as a result of changes in the independent variable of concentration or temperature (see the paragraph bridging pages 5-6 of the specification and Appellant's reply of April 3, 2003 at pages 3-5). Such advantages are not within the disclosure of the cited combinations of references.

Overall, the unexpected advantages of the present invention include the minimum expenditure of time and labor in obtaining data in a form that allows an overview of the dependent variables over a wide range of temperature and concentration values. Further, the present invention has achieved a method and device that simplifies a procedure for three-dimensional diagramming, including phase diagramming (i.e., see the features of independent claims 1 and 7) since the independent variables of temperature and concentration component are predetermined and adjusted by program controls (as explained in Appellant's reply filed April 18, 2002 at page 2, lines 8-23).

Appellant respectfully further submits that none of the cited references describes an automated device having the ability to make all the necessary measurements and to create a three-dimensional diagram, where at least one dependent physical or chemical property is measured and illustrated as a function of the two independent variables, temperature and concentration. The need for such a device is obvious, but no one has been able to find a solution on this problem for decades. This fact alone is strong evidence that the present invention has both novelty and inventive merit.

Thus, Appellant respectfully submits that the present invention has achieved unexpected results that rebut the asserted *prima facie* case of obviousness with regard to the cited combinations of references. Reversal of these rejections under 35 U.S.C. § 103(a) is respectfully requested.

Besides the unexpected results of the present invention, Appellant herein requests consideration of all evidence of patentability on record, including the arguments of patentability presented herein.

**e. Concluding remarks**

The Examiner has overall failed to establish a *prima facie* case of obviousness. For instance, there is no reference that relates to the objectives of the present invention and even develops an automated

method to produce a three-dimensional diagram. Appellant further notes that the benefits of the invention are evident, especially in light of how most of the references have been published in the seventies or eighties. It is apparent to one of ordinary skill in the art that no one else has understood how to achieve the present invention, despite the disclosure of all of the cited references. Furthermore, any such combination would still not disclose all features as instantly claimed (please refer to the chart on page 69). Thus, not even the initial requirement of disclosure of all claimed features for a *prima facie* case of obviousness has been satisfied. Appellant also maintains that the requisite motivation and/or reasonable expectation of success are lacking. Accordingly, reversal of this rejection of claims 1 and 4 is respectfully requested.

**2. Appealed claims 2 and 5**

Appellant respectfully asserts that the cited combination of Rouse in view of Ajith and Inoue do not render claims 2 and 5 as obvious as follows.

Claim 2 recites the following elements of the present invention:

Claim 2. A method according to Claim 1, characterised in that, A method according to Claim 1, characterised in that, a **series of measurements are done under rising temperature, and following series of measurements are done under decreasing temperatures and vice versa.**

Claim 5 recites the following elements of the present invention:

Claim 5. A method according to Claim 1, characterised in that, **the temperature of each measuring point is measured simultaneously with the physical and/or chemical property.**

The features in claim 2 also at issue are seen from the claim language: "a series of measurements are done under rising temperature," "following series of measurements are done under decreasing temperatures", and "vice versa". The features in claim 5 are seen from the claim language: "the temperature of each measuring point is measured simultaneously wit(h) the physical and/or chemical property".

All of the arguments presented above for claims 1 and 4 (see subheading "I.") apply to claims 2 and 5 as well since each of claims 2 and 5 includes the embodiment of claim 1, but with more patentably distinct features. Even assuming, *arguendo*, that all previously stated arguments are unpersuasive, Appellant asserts that the cited combination of references still lacks disclosure of the claimed methods as recited in claims 2 and 5. For instance, there is no disclosure in any of the cited references (nor a suggestion of) the temperature features of claims 2 and 5, such as the claim language of "series of measurements are done under rising temperature" of claim 2. Thus, Appellant respectfully submits that each of claims 2 and 5 is patentable distinct from the cited combination of references.

Accordingly, reversal of the rejection of claims 2 and 5 from the Board is respectfully requested.

3. Appealed claim 6

Appellant asserts that the cited combination of Rouse in view of Ajith and Inoue do not render claim 6 as obvious as follows.

Claim 6 recites the following elements of the present invention:

Claim 6. A method according to Claim 1, characterised in that, **the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight.**

The features in claim 6 also at issue are seen from the claim language: "the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight".

All of the arguments presented above for claims 1 and 4 (see subheading "I.") apply to the invention of claim 6 as well since claim 6 includes the embodiment of claim 1, but with more patentably distinct features. Even assuming, *arguendo*, that all arguments in Group I are unpersuasive, Appellant asserts that the cited combination of references still lacks disclosure of the claimed methods as recited in claim 6. For instance, there is no disclosure in any of the cited references (nor a suggestion of) the

concentration features of claim 6, such as the claim language of "the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight" of claim 6. Thus, Appellant respectfully submits that the invention of claim 6 is patentable distinct from the cited combination of Rouse, Ajith and Inoue. Reversal of this rejection by the Board of claim 6 is respectfully requested.

**4. Appealed claims 7, 8 and 10**

Appellant asserts that the cited combination of Rouse in view of Ajith and Inoue do not render claims 7, 8 and 10 as obvious as follows.

Claim 7 recites the following elements of the present invention:

Claim 7. A device for the characterisation of the physical and/or chemical properties of a liquid, characterised in that, it comprises  
a) a measuring cell (1) provided with

i) an equipment (2) for the homogenisation of a liquid,

ii) at least two control equipment (3, 17), which comprise or are attached to control programs for changing of the two independent variables, component concentration and temperature, in a predetermined manner, the control equipment (3) of the component concentration comprising a dosage organ for the addition of another liquid containing a different component concentration to the measuring cell,

iii) at least one measuring organ (9, 13, 14) for the determination of at least one dependent physical and/or chemical property of the liquid, and

iv) optionally a measuring organ (15) for the determination of the temperature,

b) at least one computer (5) for

i) the reception and storage of data relating to the dependent and independent variables via at least one electronic circuit (11', 12', 13', 14', 15') and the calculation of at least the component concentration from data obtained from the control program and

ii) compilation of the received and calculated values into three-dimensional measuring points and

c) equipment (16) for visualisation of the measuring points stored in the computer in a three-dimensional diagram.

Claim 8 recites the following elements of the present invention:

Claim 8. A device according to Claim 7, characterised in that, the equipment for the control of the temperature of the fluid comprises **a jacket (17) or a heating coil** for the cooling and/or heating by means of a heat transfer medium, whereby **cooling and heating is controlled by a program in the computer (5)**.

Claim 10 recites the following elements of the present invention:

Claim 10. A device according to Claim 7, distinguished by the fact that **control programs are included in the computer (5)**.

The features in claim 7 also at issue are seen from the claim language regarding the measuring cell, the various equipment and control equipment, measuring organs, computer, etc. The features in claim 8 are seen from the claim language: "cooling and heating is controlled by the program in the computer (5)". With regard to claim

10, Appellant respectfully refers the Board to the bolded claim language above.

All of the arguments presented above for claims 1 and 4 (see subheading "I.") apply to these claims as well since claims 7, 8 and 10 are rejected under the same combination of references and have similar features as appealed claim 1. Even assuming, *arguendo*, that all previously stated arguments are unpersuasive, Appellant asserts that the cited combination of references still lacks disclosure of the claimed devices as recited in claims 7, 8 and 10. For instance, there is no disclosure in any of the cited references (nor a suggestion) of the measuring cell having at least two control equipment (3, 17), which comprise or are attached to control programs for changing of the two independent variables of component concentration and temperature as claimed (see claim 7). Thus, Appellant respectfully submits that each of claims 7, 8 and 10 is patentable distinct from the cited combination of references. Accordingly, Appellant respectfully requests reversal of this rejection of these claims.

For the reasons advanced above, it is respectfully submitted that all claims on appeal in this application are allowable. **Accordingly, favorable consideration and reversal by the Honorable Board of Patent Appeals and Interferences of the Examiner's various rejections under 35 U.S.C. § 103(a) of claims 1, 2, 4-8 and 10 is**



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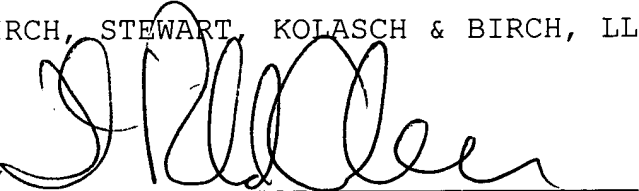
respectfully solicited. The rejections of the Examiner are without basis, and should be reversed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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2954-0102P

**(VIII) Claims Appendix**

Claim 1. A method for the characterisation of physical and/or chemical properties of a liquid, characterised in that,

1) at least one dependent physical and/or chemical property of a liquid is measured in a measuring cell as a function of temperature and a component concentration as independent variables,

2) the values for the component concentration in the measuring cell are determined by calculation, based on data from a control program for the change of component concentration in a computer and the temperatures are determined by calculation from a temperature control program or by measurements;

3) the value of the component concentration in the measuring cell is changed by adding in one step or gradually a predetermined amount of another liquid containing a different component concentration into the measuring cell according to the control program for the change of the component concentration, and a representative number of measurements of the dependent physical or chemical property are performed in the measuring cell within the whole selected temperature range within the predetermined change of the component concentration,

4) the procedures above are repeated at desired component concentrations and temperatures in order to obtain a wanted number of values;

5) the values obtained for the dependent properties are combined with the values for the independent properties to measuring points; and  
6) the measuring points electronically stored in the computer are coordinated and visualised in a three-dimensional diagram.

Claim 2. A method according to Claim 1, characterised in that, a series of measurements are done under rising temperature, and following series of measurements are done under decreasing temperatures and vice versa.

Claim 4. A method according to Claim 1, characterised in that, the changes in concentration and/or the temperature are controlled by a program in the computer.

Claim 5. A method according to Claim 1, characterised in that, the temperature of each measuring point is measured simultaneously with the physical and/or chemical property.

Claim 6. A method according to Claim 1, characterised in that, the predetermined amount of the another liquid added to the liquid amends the concentration of the component in the liquid with 0.01-5 % by weight.

Claim 7. A device for the characterisation of the physical and/or chemical properties of a liquid, characterised in that, it comprises

a) a measuring cell (1) provided with

i) an equipment (2) for the homogenisation of a liquid,

ii) at least two control equipment (3, 17), which comprise or are attached to control programs for changing of the two independent variables, component concentration and temperature, in a predetermined manner, the control equipment (3) of the component concentration comprising a dosage organ for the addition of another liquid containing a different component concentration to the measuring cell,

iii) at least one measuring organ (9, 13, 14) for the determination of at least one dependent physical and/or chemical property of the liquid, and

iv) optionally a measuring organ (15) for the determination of the temperature,

b) at least one computer (5) for

i) the reception and storage of data relating to the dependent and independent variables via at least one electronic circuit (11', 12', 13', 14', 15') and the calculation of at least the component concentration from data obtained from the control program and

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ii) compilation of the received and calculated values into three-dimensional measuring points and

c) equipment (16) for visualisation of the measuring points stored in the computer in a three-dimensional diagram.

Claim 8. A device according to Claim 7, characterised in that, the equipment for the control of the temperature of the fluid comprises a jacket (17) or a heating coil for the cooling and/or heating by means of a heat transfer medium, whereby cooling and heating is controlled by a program in the computer (5).

Claim 10. A device according to Claim 7, distinguished by the fact that control programs are included in the computer (5).

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**(IX) Evidence Appendix**

(Not applicable.)

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**(IX) Related Proceedings Appendix**

(Not applicable.)